NAME: DATE:

Mastery Assessment of Unit 2 (Practice version 105)

Question 1

Let f represent a function. If $f[44] = 48$, then there exists a knowable solution to the equation below.

$$y = \frac{f[4\,(x+3)] + 14}{31}$$

Find the solution.

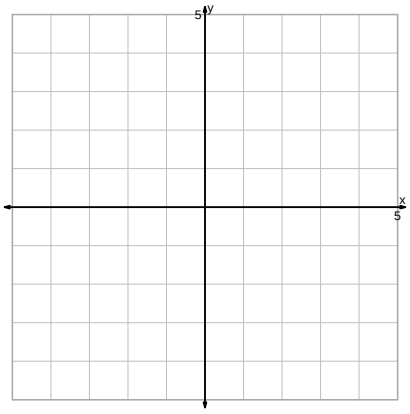
$x =$

$y =$

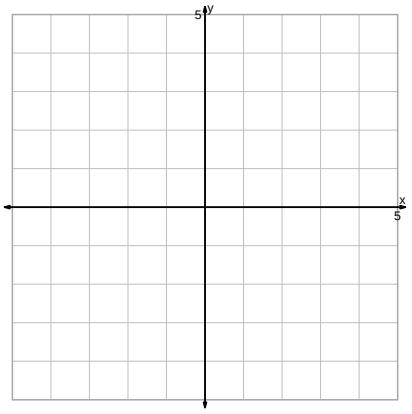
Question 2

Graph the equations accurately. For each integer-integer point on the parent, indicate the corresponding point precisely. Also, with dashed lines, indicate any asymptotes.

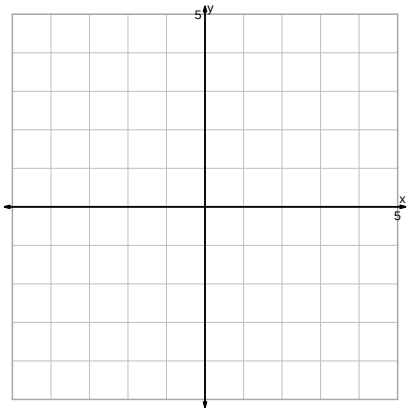
$y = (x+2)^3$



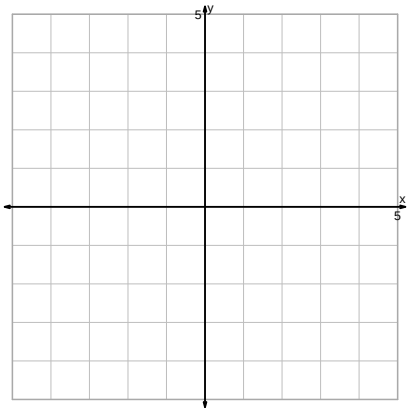
$y = \frac{x^2}{2}$



$y = \sqrt[3]{x} - 2$

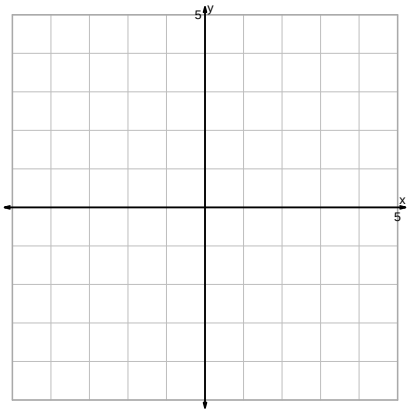


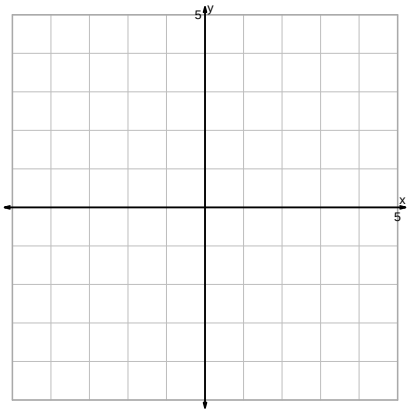
$y = 2^{2x}$



Question 2 continued...

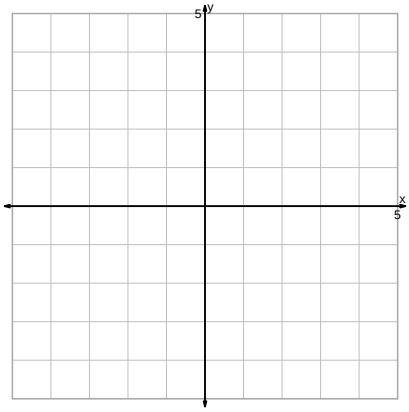
$y = \log_2(x) + 2$

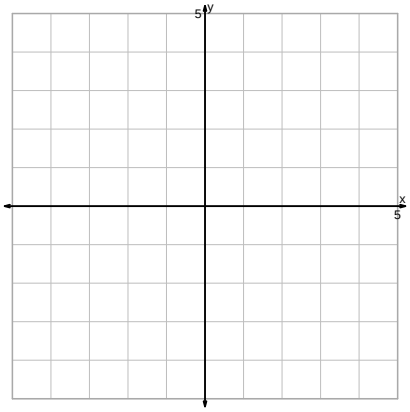




$y = \sqrt[3]{\frac{x}{2}}$

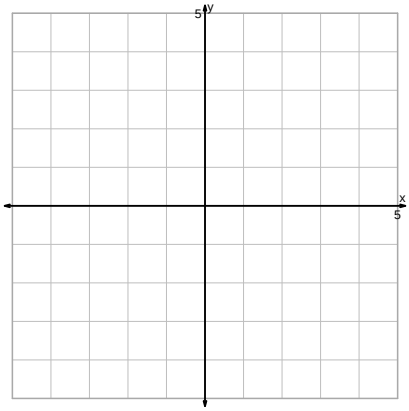
$y = -\log_2(x)$

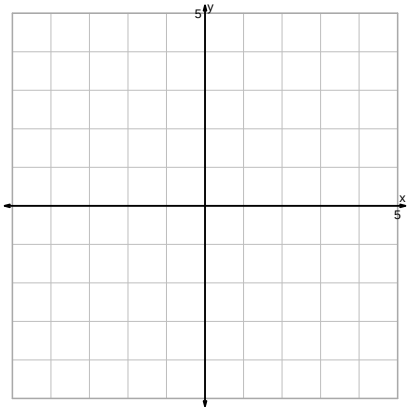




$y = 2 \cdot x^2$

$y = \sqrt{-x}$

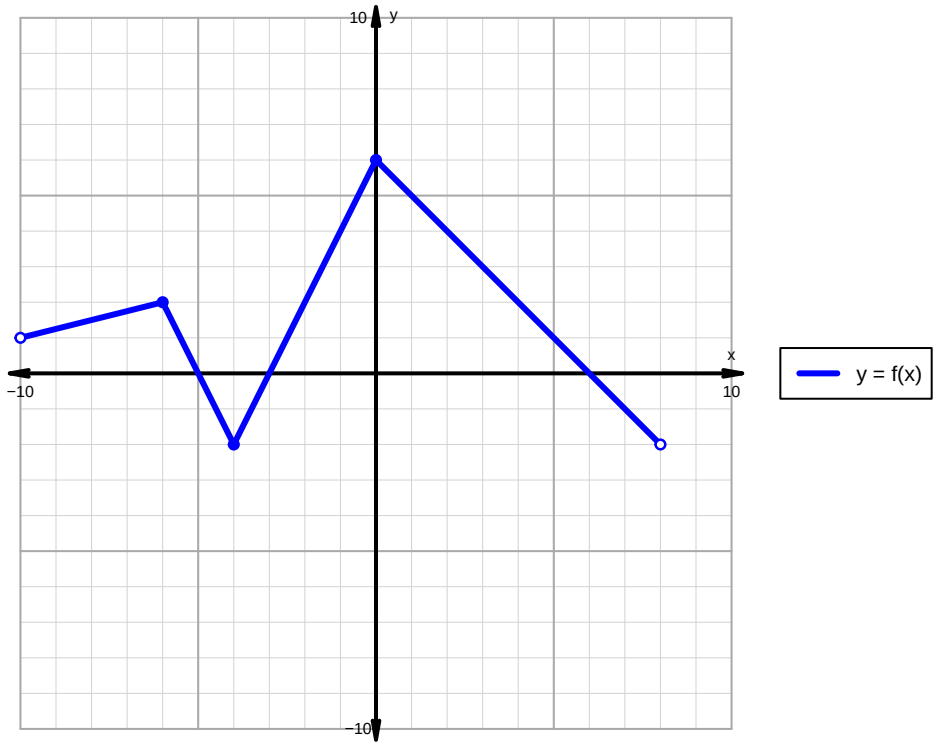




$y = \sqrt{x-2}$

Question 3

A function is graphed below.



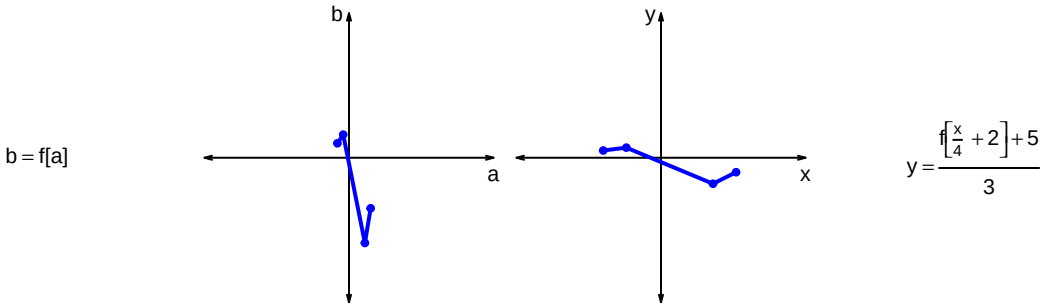
Indicate the following intervals using interval notation.

Feature	Where
Positive	
Negative	
Increasing	
Decreasing	
Domain	
Range	

Question 4

Let f represent a function. The curves $b = f[a]$ and $y = \frac{f\left[\frac{x}{4}+2\right]+5}{3}$ are represented below in a table and on graphs.

a	b	x	y
-8	10	-40	5
-4	16	-24	7
11	-59	36	-18
15	-35	52	-10



a. Write formulas for calculating x from a and calculating y from b. (Or, write the coordinate transformation formula.)

b. What geometric transformations (using words like translation, stretch, and shrink), and in what order, would transform the first curve $y = f[x]$ into the second curve $y = \frac{f\left[\frac{x}{4}+2\right]+5}{3}$?

Question 5

A parent square-root function is transformed in the following ways:

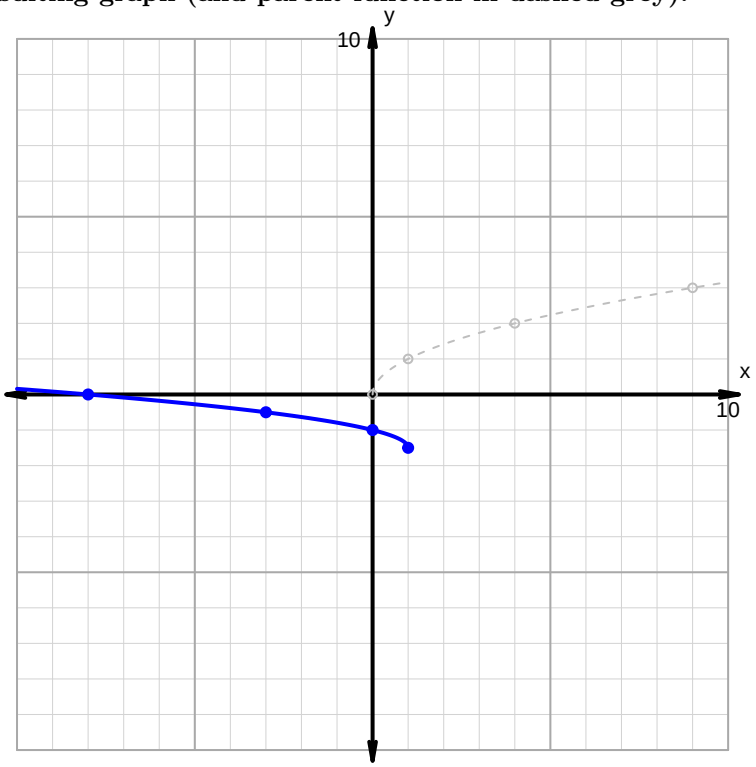
Horizontal transformations

1. Horizontal reflection over y axis.
2. Translate right by distance 1.

Vertical transformations

1. Translate down by distance 3.
2. Vertical shrink by factor 2.

Resulting graph (and parent function in dashed grey):

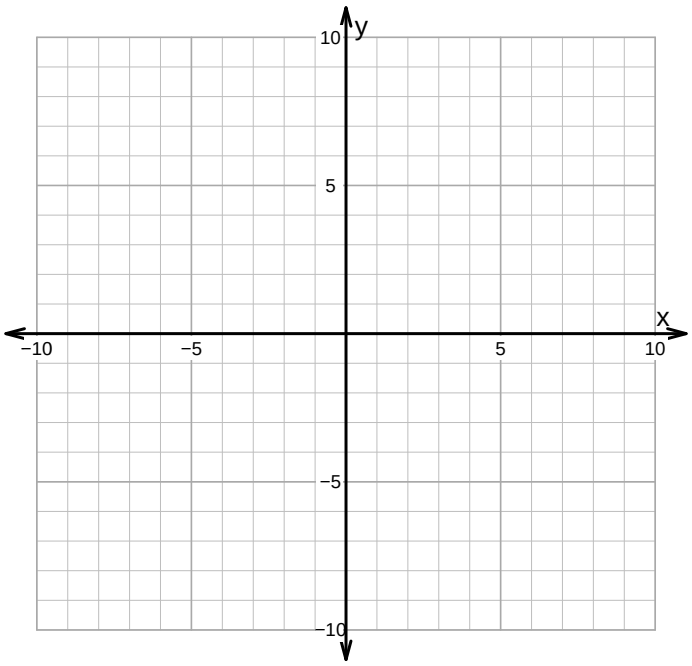


- What is the equation for the curve shown above?

Question 6

Make an accurate graph, and describe locations of features.

$$y = \frac{-1}{3} \cdot |x + 6| + 1$$



Feature	Where
Domain	
Range	
Positive	
Negative	
Increasing	
Decreasing	